



# **SHAFT POWER METER (SPM)**

**Measurement / Performance Monitoring**

# SHAFT POWER METER (SPM)

## System for measuring engine / ship performance and fuel / propulsion efficiency as well as monitoring SHaPoLi

The Shaft Power Meter is the key component for measuring ship performance and fuel / propulsion efficiency. It is the cost-effective solution when reliable shaft power measurement and monitoring (Shaft power limitation) is required. The system is easy to install and requires no electronic parts on the shaft. SPM operates absolutely contact-free and can be extended with our fuel performance system FPS to obtain all important data for optimizing ship performance and fuel efficiency as well as ship propulsion performance.



### Features:

- » RPM, torque and power signals
- » Reliable data
- » SHaPoLi / EEXI
- » Key component for fuel performance system FPS to optimize fuel / propulsion efficiency
- » PLC-based system with web-based visualization via Ethernet
- » Data storage on SD card

### Benefits:

- » Cost-effective solution
- » Easy self installation possible - plug & play by crew
- » No electronic parts on shaft
- » Basis for every fuel performance system
- » Easy to read trend curves for performance evaluation
- » Steady observation of hull and propeller efficiency possible
- » Easy calibration of SPM based on indicated power measurement
- » Maintenance-free

# Shaft Power Meter (SPM)

SHaPoLi

EEXI

## SHAFT POWER MEASUREMENT AND SHAFT POWER LIMITATION (SHAPOLI)

An easy and cost-effective solution to meet the EEXI requirements

One of the two main types of ship power limitations is the shaft power limitation (SHaPoLi).

The BG Verkehr (German Social Accident Insurance Institution for Commercial Transport, Postal Logistics and Telecommunication) confirms, that the Aquametro Oil & Marine SHaPoLi system complies with the specifications of the IACS EEXI implementation guideline Rec. No.172 which is based on Resolution MEPC.335(76) – 2021 GUIDELINES ON THE SHAFT/ENGINE POWER LIMITATION SYSTEM TO COMPLY WITH THE EEXI REQUIREMENTS AND USE OF A POWER RESERVE.

In view of the fact that the Aquametro Oil & Marine SHaPoLi system is an integral part of the class approved Aquametro Oil & Marine SPM - Shaft Power Meter monitoring system the SHaPoLi related features here are also in accordance with MEPC.335(76).

These DNV-approved SHaPoLi-related features acc. MEPC 335 (76) (subject to case-by-case verification) include:

- » Shaft power measurement devices to measure shaft rpm, shaft torque, shaft power
- » Data processing and recording of shaft rpm, shaft torque and shaft power in unlimited mode
- » Indication of shaft power limit exceedance
- » Recording of use of a power reserve
- » Interfaces applicable for power limitation override alarm acc. IACS Rec. 172, Sec. 6.6
  - Potential free digital output tamper proof - common alarm output
  - Potential free digital output tamper proof - to configure
  - Digital output tamper proof - to configure
  - Modbus RTU / TCP/IP (ETH)
  - NMEA protocol



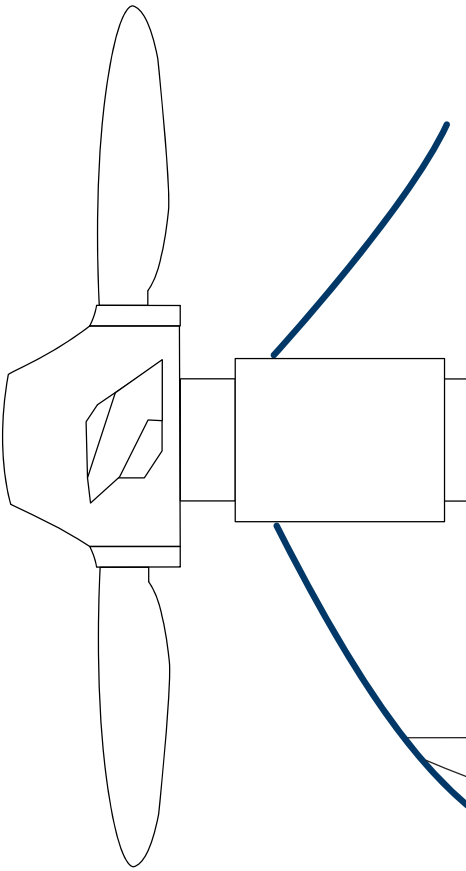
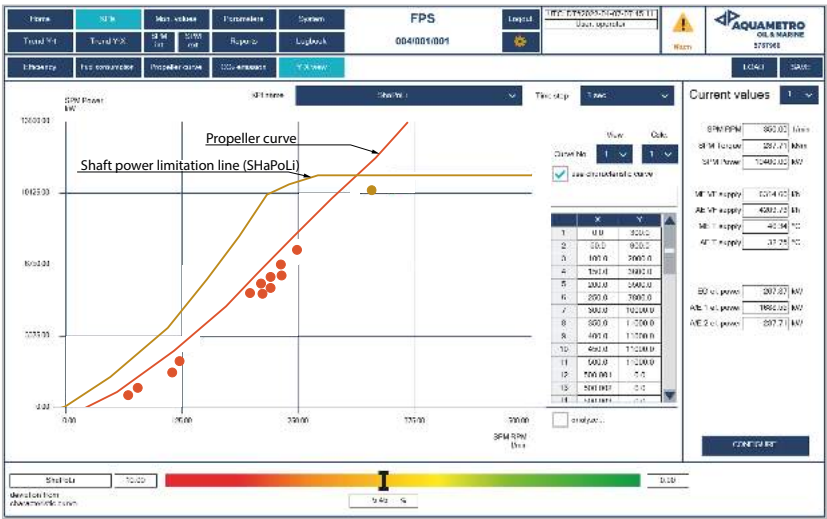
# SYSTEM OVERVIEW

The Aquametro Oil & Marine Shaft power meter SPM works on reliable magnetic principle. Therefore, the torsion angle of the shaft, resulting from the acting shaft power is measured. Only magnetic belts need to be fixed on the shaft surface, no electronic components have to be mounted on the shaft, therefore this system is maintenance-free and absolutely robust and reliable.

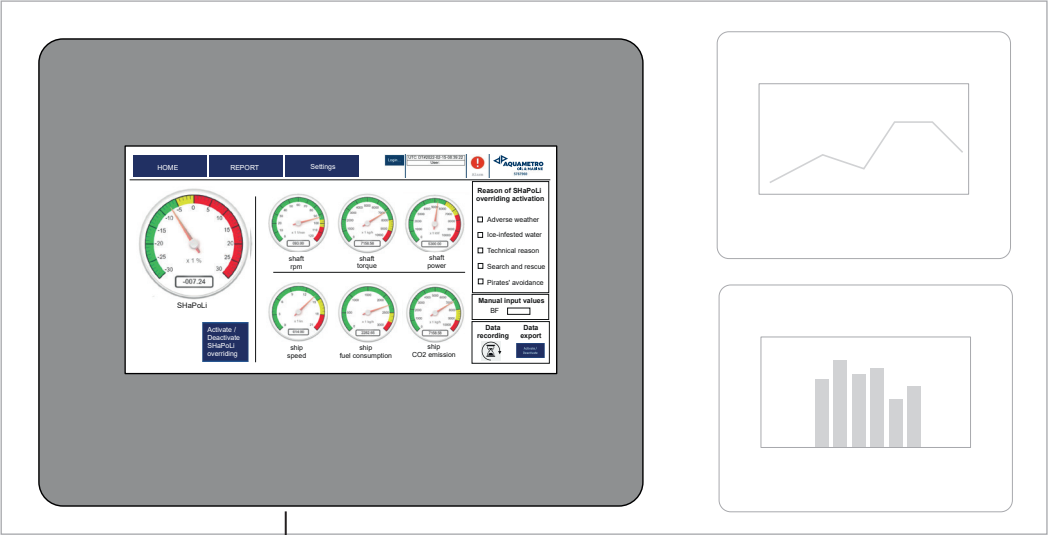
The connection to any ship automation system can be done easily with analog signals (0 / 4-20 mA). Available outputs are: RPM, Torque (kNm) and shaft power (kW) through analog or / Modbus slave ETH (TCP) signal interface.

### Specifications:

- » Power supply: 230 V AC
- » Power consumption: <2 A
- » Shaft diameter: 200 up to 1200 mm
- » Max speed of shaft: 800 rpm



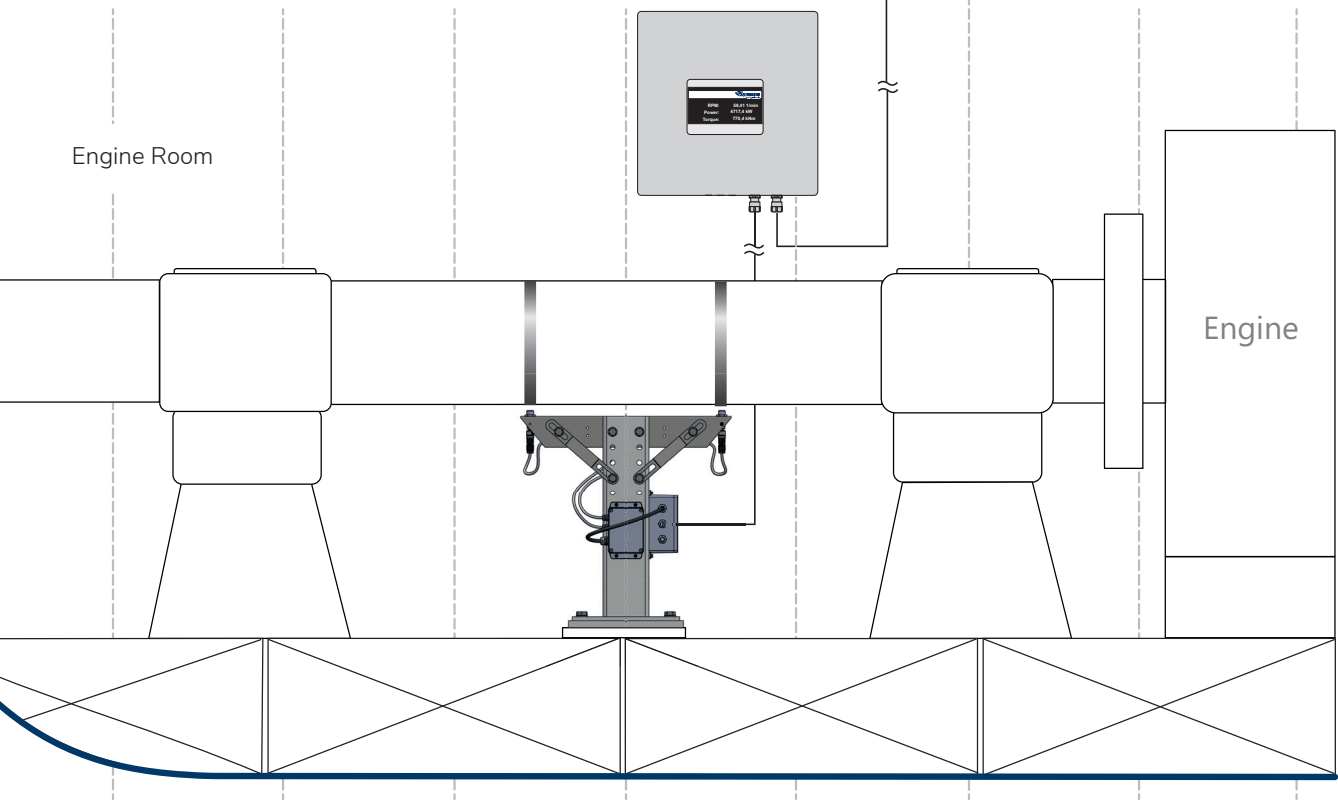
Wheel House



Engine Control Room



Engine Room



# SPM extended with FPS fuel performance system

The Shaft Power Meter can be extended with the Fuel Performance System (FPS). By using the same hardware for SPM and FPS, customers benefit from savings on procurement costs when adding our FPS to SPM. Combining the fuel performance system - FPS with SPM allows you to calculate all important data as well as KPI values to optimize your ship performance and fuel efficiency and ship propulsion performance.

### Features:

- » Web based visualization and reporting
  - Data collection
  - Trend curves
  - KPI analysis
  - Plausibility check
  - Monitoring and reporting
  - Fuel transparency and optimization
  - Customizable monitoring systems

### Benefits:

- » In the office
  - Web access for fleet management
- » On the bridge
  - Performance and monitoring management
- » In the ECR
  - Performance and monitoring of all data calculated KPI's
- » Same hard and software components for SPM and FPS (synergy effect)

More information can be found in our FPS brochure.

